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June 23, 2004

PCT-Application PCT/IB 02/02160

Applicant: Nokia Corporation
Our Ref.: 51017 WO (KG/TP)

In Response to the Office Action Pursuant to Rule 66 PCT Dated April 25, 2004:

Enclosed please find

- a set of new claims 1 to 18,

which replaces the claims being presently on file and on the basis of which subsequent proceedings should be carried out without prejudice.

I. New Claims

The new claim 1 is formed by combination of claim 1 and the feature relating to the definition of the portion of keys and is reformulated to improve its readability. Additionally, the first assignment being valid for the second selection of keys and second assignment valid for the first selection of keys, defined in the preamble, is restated to emphasize the "mixed assignment" input mode operable with keyboard operation mode being in the second mode

The new claims 2 to 18 correspond to the claims 2 to 18 being presently on file.

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II. State of the Art

The Examiner cites following state of the art documents as being relevant in view of the present invention, which are:

- D1: EP 0 933 908 A2;
- D2: WO 01 31897 A1;
- D3: US 2002 006815 A1; and
- D4: US 2002 044136 A1.

In the following a brief description of the cited state of the art documents will be given.

D1 relates to an electronic apparatus, especially a cellular phone, and a method for operating said electronic apparatus. The electronic apparatus comprises a body portion with a lid, which is hingeably coupled to the body portion and which is movable about a hinged join between an open position and a closed position. In the open position a surface portion of the body portion is uncovered by the lid, whereas in the closed position the surface portion is covered thereby. A first plurality of keys is arranged on the surface portion, a second plurality of keys is provided on an inner surface of the lid and a third plurality of keys is provided on an outer surface of the lid.

The second plurality of keys provided on the inner surface of the lid and the third plurality of keys provided on the outer surface thereof are accessible to a user in the open position and forms in co-operation with each other an extended keyboard, in particular a QWERTY-styled keyboard. The first plurality of keys is accessible by the user for user input in the open position and corresponds substantially to an (ITU-T) telephone keypad allowing primarily the input of telephone numbers.

Typing modes operable with the extended keyboard are provided to be used with the extended keyboard. In a first typing mode the extended keyboard operates for enabling the entry of alphanumeric input, whereas in a second typing mode a set of function keys formed of a subset of keys of the extended keyboard serves and is operable as an (ITU-T) telephone keypad, respectively. The typing modes are selectable by entering a specific command through the user interface or by pressing a specific key of the extended keyboard for instructing said specific command.

D2 relates to a keyboard and a mobile communication device, with which the keyboard is detachably connectable. The keyboard is connected to the mobile communication device by an input/output connection adapted and has individual keys, which are suitable for inputting alphanumeric symbols, in particular for text messages being able to be communicated by the mobile communication device. According to an embodiment of D1, the keyboard is formed of a keyboard body as well as a keyboard itself. The keyboard body includes means for detachable coupling with the mobile communication device and the keyboard is designed pivotably such that in an open position of the arrangement (of the keyboard and the mobile communication device) the keypad of the mobile communication

device is operable, whereas in a closed position of the arrangement the keypad of the mobile communication device is at least partially covered by the keyboard, i.e. user input can be actuated through the detachably connected keyboard. Further, the keyboard can be provided to substitute functionally for the keypad of the mobile communication device by using selectively a subset of keys of the keyboard which subset corresponds functionally to the keys of the keypad of the mobile communication device.

D3 relates to a mobile communication device, which has a body with a foldable-coupled cover such that the mobile communication device is operable with closed and opened cover. The teaching of D3 corresponds substantially to that disclosed in D1. However, D3 does not disclose any embodiment comparable with the aforementioned embodiment of D1 having typing modes and function keys, which are useable as keys of a (QWERTY) extended keyboard and keys for forming an (ITU-T) telephone keypad.

D4 relates to a mobile communication device, which is for instance shaped in the design of a PDA and which is provided with a QWERTY-like keyboard. The keys of the keyboard have assigned multiple functions. In particular by activation of a "NUM Lock" key number input is operable by the user pressing keys, which are operable otherwise for character input.

III. Object and Solution of the present Application

The object of the present invention is to provide a mobile communication device with a keyboard and a method for controlling the keyboard operation thereof, which keyboard offers an improved usability to a user in view of a user input of telephone numbers and control codes applicable with telephone numbers.

The improved usability is attained by providing an extended QWERTY-like styled keyboard in the mobile communication device, which keyboard allows the user to input alphanumeric text. A set of keys of the keyboard is operable as an ITU-T-like styled keypad enabling the user for one-handed input of telephone numbers and supporting the input of the telephone numbers memorized geometrically with respect to the layout of the keypad. The keypad operation is associated with a specific input operation mode of the keyboard, which input mode switched the set of keys forming the keypad from a first assignment to a second assignment, which first assignment is applicable with the input of alphanumeric text and which second assignment is applicable with the input of telephone numbers as described above. Furthermore an additional set of keys is operable with the specific input operation mode, which keys enable to input control symbols in addition to the input of telephone numbers.

IV. Novelty and Inventive Step

The Examiner presupposes that D1 represents the closed prior art in terms of the subject matter of the present invention.

As described above in detail with reference to the background cited by the Examiner D1 lacks in teaching the present invention. In detail, D1 teaches the known measure to implement a keypad within an extended keyboard, which teaching is naturally well known by the Applicant.

Firstly, typing modes according to D1, which control the usage of the extended keyboard, i.e. either the functionality of the keyboard as such or the limited functionality restricted to the keys forming a keypad within the extended keyboard, are selectable by entering a specific command through the user interface or by pressing a specific key of the extended keyboard for instructing said specific command (cf. D1, column 6, lines 13 to 24).

In contrast to that known solution for switching between the typing modes, the present invention according to the subject matter of independent claims 1 and 18 is based on an automated switching of the keyboard operation modes, designated as first mode and second mode, in relationship to applications operable on the mobile communication mode. This means, when such an application is initiated by the user, the keyboard operation mode is autonomously and automatically switched correspondingly.

Further, D1 does not disclose any mixed mode usage of first and second key assignments, which forms a characterizing feature of the present invention. Rather, it has to be assumed when starting from the teaching of D1 that the limited functionality as described above is exclusively operable as a telephone keypad while the remaining keys are switched out of operation.

Furthermore, D1 lacks completely teaching additional control symbols useful and required for several phoning application, especially in communication with private branch exchange installations and automated computerized telephone equipment such as telephone equipment controllable through DTMF-based signaling.

This lack of teaching is supported by comparison of specific embodiments of the present invention and D1. Referring to Fig. 4 and 5, the skilled reader is taught to arrange to keypad implemented within the keyboard, i.e. the second assignments of the keys forming the keypad. In accordance with the embodiments of the present invention shown in Fig. 1 and 2 thereof in detail, the skilled reader is instructed to select an arrangement of the second assignments for the telephone keypad functionality, which in particular keeps the keys "P" and "W" without any second assignment to allow association of these keys for usage as control symbols as described illustratively page 7, line 36 to page 8, line 2 and page 9, lines 21 to 24. The arrangement shown in the embodiment of D1 is not applicable for the teaching of the present invention.

D4 discloses the use of a keyboard including a "NUM lock" function key to enable the input of numerical symbols (i.e. numbers) by the means of an extended QWERTY-like styled but limited keyboard which is limited in the number of keys being substantially assigned to character symbols. Although the D4 teaches to implement such a "NUM lock" function key to switch a row of keys, herein the row including the characters "Q" to "P", to a second assignment enabling the input of numerical symbols, assume for instance "1" to "0", the teaching of D1 remains silent about the operability of the remaining keys having character symbol assignment.

Moreover, D4 teaches a user controlled switching of the keyboard input modes, i.e. the manual user activation by actuation of the "NUM lock" function key to enable numerical symbol input. An application-based automated and autonomous switching as claimed by the present invention is neither disclosed nor intimated by D4.

The considerations concluded above with reference to D1 and D4 relate also to D2 and D3, which do not contribute any additional relevant teaching to D1 and D4.

Consequently, in our opinion the present invention as claimed is novel and inventive over the cited technical background. On the contrary, the objections stated by the Examiner represents in our view an ex post consideration, which is not applicable for denying an inventive step.

V. Request

The Examiner is kindly requested to re-consider its opinion about the patentability of the present claims taking into account the arguments and point of view stated above in detail.

Dr. Thomas Kurig
(Patent Attorney)

Enclosure

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New Claims

1. A mobile communication device, comprising:

- 5 - a set of keys organized as a keyboard, said set of keys each having a first assigned function for entering alphanumeric text;
- wherein at least a subset of keys included in said set of keys is arranged in a pre-determined configuration, said subset of keys each having a second assigned function for entering alphanumeric text; and
- 10 - a plurality of applications executable on said mobile communication device; characterized in that
 - a portion of said keys comprises a first selection of keys of said subset of keys and a second selection of keys of said set of keys, wherein said first selection of keys is provided for entering numbers and telephone number related symbols in accordance with said second assigned function, wherein said second selection of keys is provided for entering control letters in accordance with said first assigned function, said control letters having a control function in relationship with the entering of telephone numbers;
 - 15 - at least one of said plurality of applications is adapted to switch a keyboard operation mode into a first mode and into a second mode;
 - said set of keys and said at least one subset of keys included in said set of keys are operable with said keyboard operation mode being in said first mode; and
 - said portion of keys is operable with said keyboard operation mode being in said second mode.

25 2. A mobile communication device according to claim 1, comprising:

- a mode selecting key for switching an input mode into a first mode and into a second mode, said mode selecting key being operable to change modes in at least one of said plurality of applications; and
- 30 characterized in that in case said keyboard operation mode is in said first mode:
 - said set of keys each having a first assigned function is operable with said input mode being in said first mode; and
 - said subset of keys each having a second assigned function is operable with said input mode being in said second mode.

3. A mobile communication device according to claim 2, characterized by:

- a keyboard controller adapted to receive signals from said keyboard and signals from said mode selecting key, and adapted to generate commands in accordance with said received signals and able to transmit said commands to at least one of said plurality of applications;
- a first set of commands is provided operable with said input mode being in said first mode and said keyboard operation mode being in said first mode, said first set of commands representing said first assigned function of said set of keys; and
- a second set of commands is provided operable with said input mode being in said second mode and said keyboard operation mode being in said first mode, said second set of commands representing said first assigned function of said set of keys.

4. A mobile communication device according to claim 3, characterized in that in case said keyboard operation mode is in said second mode:

- a third set of commands is provided, said third set of commands representing said second assigned functions of said first selection of keys and representing said first assigned functions of said second selection of keys.

5. Mobile communication device according to anyone of the preceding claims, wherein said second assigned function of said subset of keys comprises at least numbers 0 to 9 and symbols "+", "#" and "*" for entering alphanumeric characters.

6. Mobile communication device according to anyone of the preceding claims, characterized in that said second assigned function of said first selection of keys comprises at least numbers 0 to 9 and symbols "+", "#" and "*" for entering a telephone number for entering telephone numbers.

7. Mobile communication device according to anyone of the preceding claims, characterized in that said control letters comprise a letter "P" for entering a pause control function and a letter "W" for entering a wait control function, wherein said control functions are entered in combination with telephone numbers.

8. Mobile communication device according to anyone of the preceding claims, wherein said keyboard is substantially arranged as a QWERTY keyboard.

9. Mobile communication device according to anyone of the preceding claims, wherein said keyboard comprising said plurality of keys is arranged in stacked rows.

10. Mobile communication device according to anyone of the preceding claims, wherein said keyboard comprises a row including at least two space keys and two shift keys arranged symmetrically.
- 5
11. Mobile communication device according to anyone of the preceding claims, wherein said keyboard comprises a row including two mode selecting keys arranged symmetrically.
- 10 12. Mobile communication device according to anyone of the preceding claims, characterized in that said at least a variety of keys of said portion of keys are shaped different from remaining keys of said keyboard.
- 15 13. Mobile communication device according to anyone of the preceding claims, characterized in that at least a variety of keys of said portion of keys are colored different from remaining keys of said keyboard.
14. Mobile communication device according to anyone of the preceding claims, characterized by:
a keyboard detector;
- 20 - wherein said keyboard is detachably connected to said mobile communication device and has a keyboard identification component; and
said keyboard identification component is adapted to at least said first and second assigned functions of said keys of said keyboard.
- 25 15. Mobile communication device according to claim 14, characterized in that said detachably connected keyboard is included in a cover being at least a part of a housing of said mobile communication device, wherein said cover is detachably connected to said mobile communication device.
- 30 16. Mobile communication device according to claim 14 or claim 15, characterized in that said keyboard identification component is a resistor having a certain pre-determined characteristic.
- 35 17. Mobile communication device according to anyone of the claims 14 to 16, characterized in that said detachably connected keyboard is adapted to right handed use or left handed use.

18. Method for controlling an operation of a keyboard of a mobile communication device, characterized by:

- receiving a keyboard operation mode signal from at least one of a plurality of applications executable on the mobile communication device;
- switching a keyboard operation mode into a first mode and into a second mode in accordance with said received keyboard operation mode signal;

5 in case said keyboard operation mode is in said first mode:

- receiving an input mode signal;
- switching an input mode into a first mode and into a second mode in accordance with said received input mode signal;
- receiving an input signal;
- generating a command from said received input signal in combination with said input mode, said command being one of a plurality of commands including a first set of commands generated in said input mode being in said first mode and a second set of commands generated in said input mode being in said second mode, said first set of commands represents said first assigned functions of said set of keys, said second set of commands represents said second assigned functions of said subset of keys; and
- transmitting said generated command to at least one of said plurality of applications

10 in case said keyboard operation mode is in said second mode:

- receiving an input signal;
- generating a command from said received input signal, said command being one out of third set of commands; said third set of commands represents said second assigned functions of said first selection of keys and said first assigned functions of said second selection of keys; and

15 20 25 - transmitting said generated command to at least one of said plurality of applications.